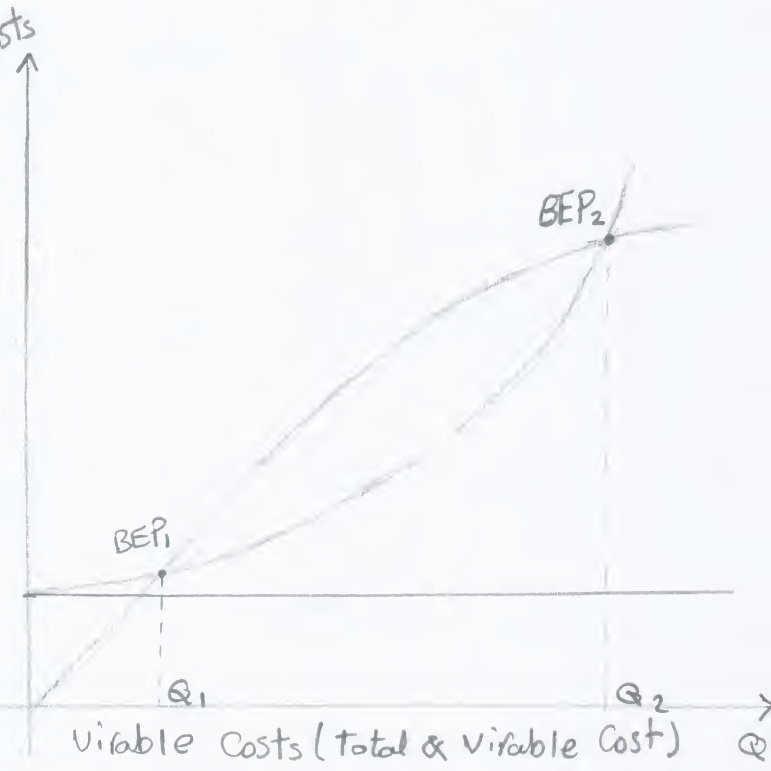
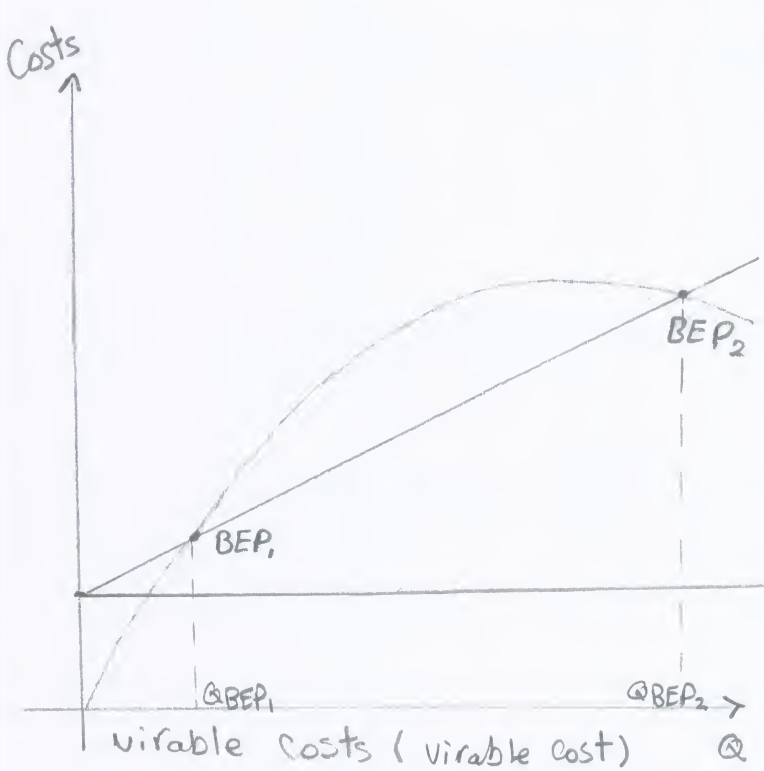
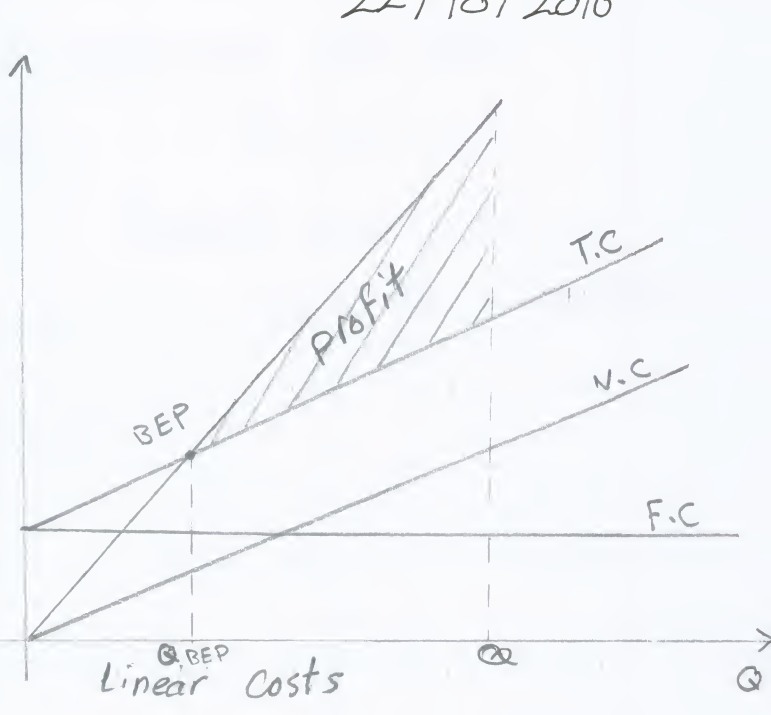
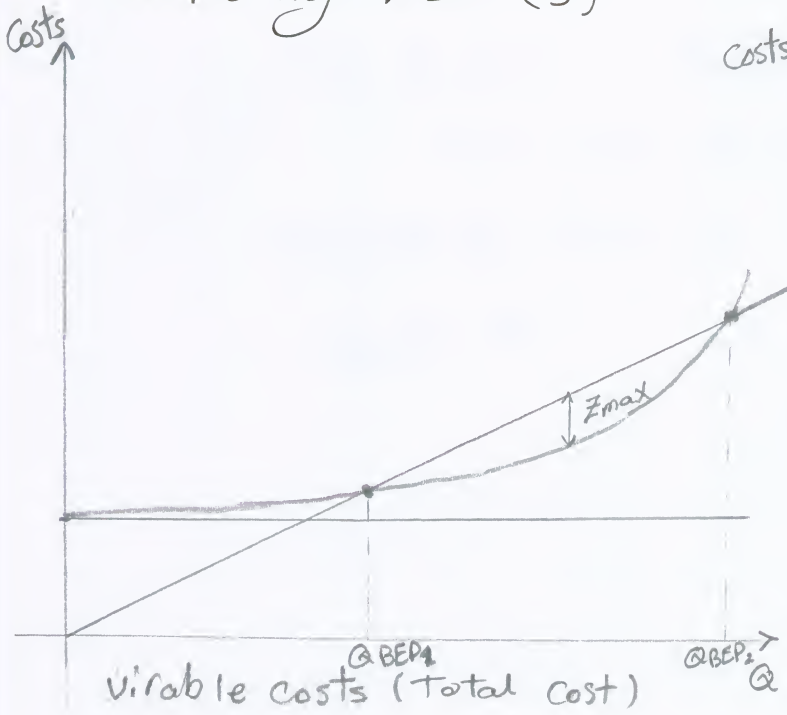


Marketing Lec (5)

22/10/2016



Ex (1) :

Data $\Rightarrow Q = 6000$ Product $a = 5$ L.E

$b = 10$ L.E

$Z = 20,000$ L.E

$Q' = 3000$ Product

$a' = 4.5$ L.E/Product

Required : (1) Q_{BEP}

(2) Z'_2

(3) Q'_{BEP}

Sol.

(I) S.I. = V.C + Profit

$$bQ = F + aQ + Z \Rightarrow F = (b - a)Q - Z$$

$$F = (10 - 5) 6000 - 20000 = 10000 \text{ L.E.}$$

$$\text{at BEP} \Rightarrow Z = 0 \Rightarrow F = (b - a)Q$$

$$Q = \frac{F}{b - a} = \frac{10000}{10 - 5} = 2000 \text{ Product}$$

(II) $Q' = 3000$ Product

$$Z' = (b - a)Q' - F = (10 - 5) 3000 - 10000 = 5000 \text{ L.E.}$$

$$(III) a'' = 4.5 \Rightarrow Q'_{BEP} = \frac{F}{b - a'} = \frac{10000}{10 - 4.5} = 1818.8 \text{ Product}$$

Ex (2)

Data : $Q = 6000$ Lamps

$b = 8.5$ L.E. / Lamp

$a = 4.5$ L.E. / Lamp

$F = 200$ L.E. / month

- BEP \Rightarrow after 4 months

Required : Q after 1 month

Z / Year (annual Profit)

Sol

(I) At BEP :

$$Q_{BEP} = \frac{F}{b-a} = \frac{200 \times 12}{8.5 - 4.5} = 600 \text{ units}$$

$$Q_{\text{month}} = \frac{600}{4} = 150 \text{ units}$$

$$\begin{aligned} \text{(II)} \quad Z &= (b-a) Q - F = (8.5 - 4.5) * (150 * 12) - (200 * 12) \\ &= 4800 \text{ L.E.} \end{aligned}$$

Ex (3)

Given a non linear Price Function.

Revenue = $100Q - 0.001Q^2$ L.E. or $b = 100 - 0.001Q$

Total Cost = $0.005Q^2 + 4Q + 200,000$ L.E. or $a = 0.005Q + 4$

Required : (i) what is the output for maximum Profit

(ii) what is the output at BEP

(iii) what is the output for minimum average cost

Sol.

$$(i) Z = (b - a)Q - F$$

$$= bQ - (aQ + F)$$

$$= 100Q - 0.001Q^2 - 0.005Q^2 - 4Q - 200,000$$

$$= -0.006Q^2 + 96Q - 200,000 \quad \text{--- (1)}$$

$$\text{at max Profit} \rightarrow \frac{dZ}{dQ} = 0$$

$$-0.012Q + 96 = 0 \rightarrow Q = 8,000 \text{ units}$$

$$\text{at (1)} \quad Z = 184,000 \text{ L.E}$$

$$(ii) \text{ at BEP} \Rightarrow (1) = 0$$

$$Q_1 = 2,462.25 \text{ units}$$

$$Q_2 = 13,537.7 \text{ units}$$

$$(iii) \text{ at T.C Function} \Rightarrow Q \text{ at max Profit} = \text{average total cost}$$
$$\text{profit at average total cost} = 552,000$$